EXPRESS

Lighting Playback Controller

User Manual

Version 3.02

Table of Contents

Introduction

The ETC Express Lighting Playback Controller (LPC) is a lighting control system that provides complete, hands-off control of area lighting, with extras. It is ideal for an environment where simplified control of lighting sequences and effects is needed. The extras include:

- MIDI Show Control (MSC) - An industry standard that allows your LPC to receive and transmit show control information using the MIDI protocol.
- ETC MIDI - A variation of MSC optimized for ETC equipment.
- Remote Macros - Start, stop and control shows with external switches, such as a door switch or a time clock.
- Remote Trigger - Provide switched control to an external device during LPC show operation.
- Print - Document the features of a particular show with printed output.
- ETCNet - Connect the LPC to a wide variety of ETC devices, such as remote interfaces and additional DMX512 devices.

The LPC uses the proven design of the Express lighting console, a full-featured lighting controller used in thousands of educational and live performance centers. The LPC takes full advantage of the same complex show technology that made Express so popular, but in a simplified package. Any show that can run on Express can run with equal success on the Express LPC. Only the show creation, editing and control capabilities are different.

Getting started

To use your LPC, please follow the installation and operation instructions contained in this User Manual. These instructions make extensive reference to the Express User Manual and Expression User Manual Supplement, both supplied with the LPC. In addition to information in these manuals regarding how shows are created and edited, you may wish to obtain a copy of Expression Off-Line. This software program emulates Expression-family consoles, including Express, allowing complete show creation and editing capabilities. Finally, if you have any questions concerning the installation or operation of the Express LPC, please call ETC Technical Services at 800-775-4382.

Following are the items contained in an LPC shipping package. The items marked with an asterisk (*) are not needed for all mounting positions. If anything is missing, please call ETC at 800-688-4116.

- The LPC unit
- LPC power supply and separate power cord
- Two convertible front mounting brackets *
- Two sliders and rear mounting brackets for a 19″ rack *
- Four rubber feet *
- Mounting fasteners
- Clock Setup diskette
- This LPC User Manual
- Express User Manual
- Expression User Manual Supplement

Mounting the LPC

The LPC may be used without brackets securing it if the surface is sufficiently level and steady. All you need to do is attach the four rubber feet with the 4-40 x 3/8″ screws, all provided with the LPC.

Do not locate the LPC closer than six feet to dimmers or high-current AC lines to avoid electromagnetic interference.

If you need to mount the LPC for stability or for operating convenience, hardware is supplied for each of the four mounting orientations listed below. The procedure to use for each mounting orientation is given next.

- In a 19″ rack
- Secured below a horizontal surface, such as a desk or shelf
- Secured to the top of a horizontal surface
- Secured to a vertical surface

Rack mounting

If you want to rack mount the LPC in a 19″ rack, refer to Figure 1 and proceed as explained in the steps following the illustration.
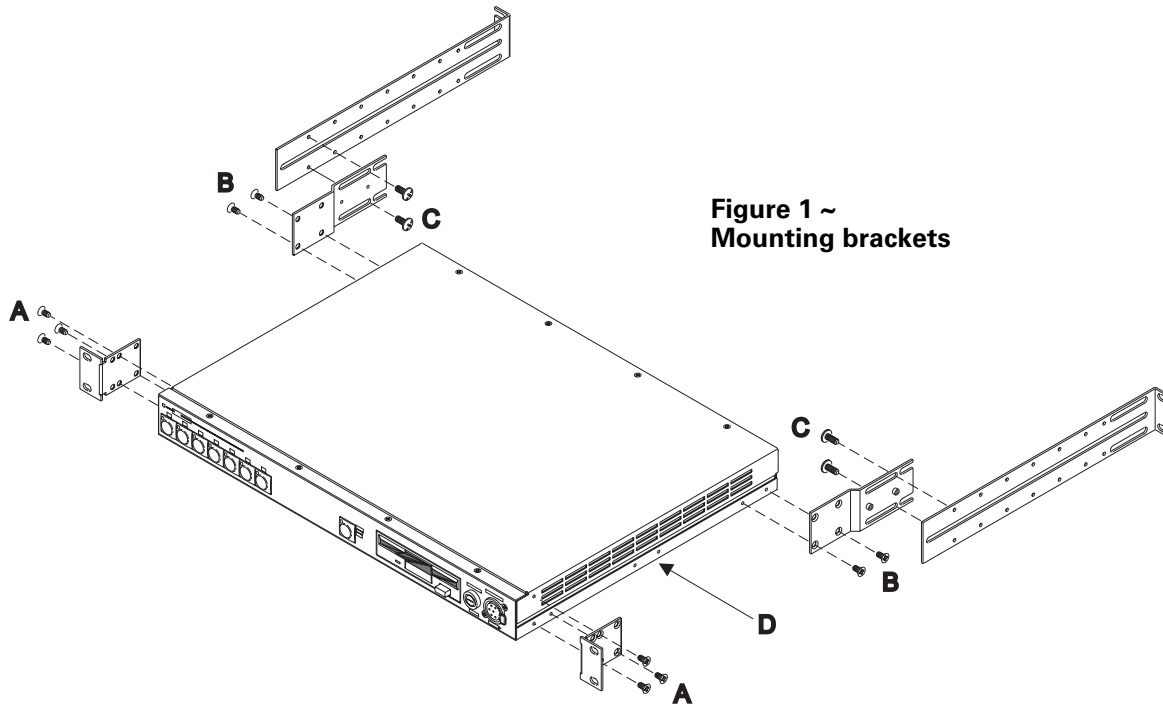
Figure 1 ~ Mounting brackets

1. Take all mounting hardware out of the plastic bags.
2. Place one black washer on each of the eight 1/2″ black Phillips-head screws.
3. Secure the two front brackets to the LPC with three 1/4″ flathead screws each (Figure 1, assembly A). Use the screw holes that position the bracket flush with the front panel, as shown.
4. Secure the two rear brackets to the LPC with two 1/4″ flathead screws each (Figure 1, assembly B). Note that the bracket bends away from the LPC.
5. Fit the LPC into the rack where you want to install it, with the front brackets on the outside surface of the rack.
6. Secure the LPC to the front of the rack using two of the black Phillips-head screws in each front bracket. If the rack holes are not threaded, place one of the threaded black clips over each hole. **Caution:** Keep the rear of the LPC supported to avoid bending the front brackets.
7. Loosely attach the two black sliders to the rear of your rack in holes opposite the ones used for the front brackets. Use two of the black Phillips-head screws and washers for each slider. If the rack holes are not threaded, place one of the threaded black clips over each hole.
8. Line up the slider and the rear bracket on each side of the LPC so that the threaded studs on the bracket fit into the slider slots. Loosely fasten the rear brackets to the slider at each side with two 3/8″ Phillips-head lockscrews each (Figure 1, assembly C). The screws go through bracket holes into the threaded slider holes.
9. Tighten the rear rack mounting screws and the four 3/8″ screws that secure the sliders to the rear brackets.

Secured below a horizontal surface

When securing the LPC to the bottom of a horizontal surface, attach with the brackets provided and with the mounting screws and anchors of your choice. Proceed as follows:

1. Take all hardware out of the plastic bags. Find the two brackets that are pictured as the front brackets in Figure 1. Also, find four of the 1/4" flathead screws. You will not need the rest of the furnished hardware for this mounting orientation.

2. Attach the two brackets to the sides of the LPC at location D shown in Figure 1, using the two bracket holes closest to its bend. Orient the brackets with the mounting flange facing toward the LPC 's top.

3. Place the LPC with attached brackets where you wish to mount it. Mark the mounting surface through the two mounting holes. Remove the LPC and set it aside.

4. Drill through the marks on the mounting surface, using a drill size appropriate to your mounting hardware. ETC recommends the use of anchors for this type of mounting.

5. Attach the four rubber feet provided in the hardware package as spacers to the top surface of the LPC. Use double-sided tape to stabilize the feet. Using these feet as spacers is important because they stabilize the mounting and provide clearance for LPC ventilation.

6. Secure the LPC to the mounting surface.

Secured to the top of a horizontal surface

Follow all steps under *Hanging from a horizontal surface*, above, except orient the brackets toward the bottom in step 2 and attach the feet to the bottom in step 5. Use the 4-40 x 3/8" screws provided to attach the feet.

Mounting along a vertical surface

When mounting the LPC vertically, attach with the brackets provided and with the mounting screws and anchors of your choice. Proceed as follows:

1. Take all hardware out of the plastic bags. Find the two brackets that are pictured as the front brackets in Figure 1. Also, find four of the 1/4" flathead screws. You will not need the rest of the furnished hardware for this mounting orientation.

2. Attach the two brackets to the sides of the LPC at location D shown in Figure 1, using the two bracket holes closest to its bend. Orient the brackets with the mounting flange facing toward the LPC's bottom.

3. Place the LPC with attached brackets where you wish to mount it. Mark the mounting surface through the two mounting holes. Remove the LPC and set it aside.

4. Drill through the marks on the mounting surface, using a drill size appropriate to your mounting hardware. ETC recommends the use of anchors for a vertical mounting.

5. Attach the four rubber feet provided in the hardware package as spacers to the bottom surface of the LPC. Using these feet as spacers is important because they stabilize the mounting and provide clearance for LPC ventilation.

6. Secure the LPC to the mounting surface.

Cabling

All connections to the LPC, except for the optional RFU, are made to the LPC's rear panel. Connect with reference to Figure 2.
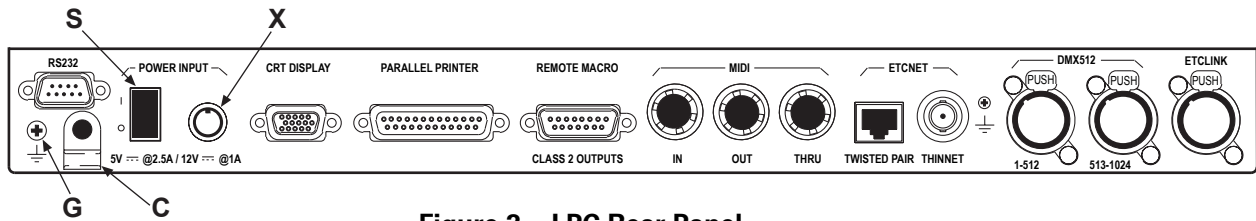

Figure 2 ~ LPC Rear Panel

Power supply

1. Push the LPC's power switch, **S**, to the off position ("O" symbol).
2. Remove the thumb screw to free cable clamp **C** from the rear panel.
3. The power supply has a cable attached to it. Clip the cable clamp over the cable near the 8-pin male connector.
4. Plug the connector into the LPC rear panel at **X**.
5. Adjust the cable clamp so that you can re-attach it to the LPC.
6. Plug one end of the furnished power cord into the power supply and the other end into a grounded power outlet.[1]

Dimmers

Connect the dimmers as explained in *Appendix A Installation* of the Express User Manual.

Accessories

If you are using a monitor, a Remote Focus Unit, a printer, ETCNet, MIDI or remote macros with your LPC, or if your show performs remote triggering, connect and install as explained in *Appendix A Installation* of the Express User Manual.

---

[1]. *The chassis may also be grounded, if needed, by placing a ground wire under the Phillips-head screw at* **G**.

Front panel

The LPC's front panel is illustrated in Figure 3, below.
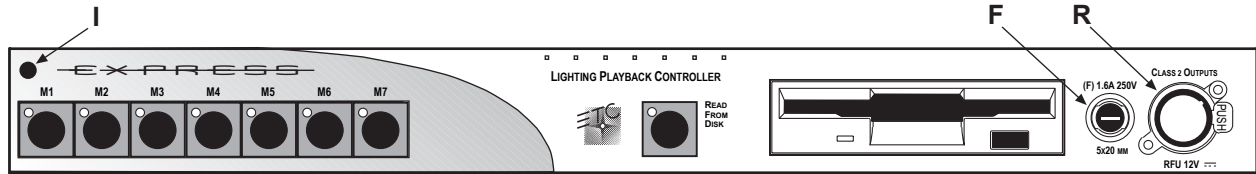
Figure 3 ~ LPC Front Panel

The features of the LPC front panel are, from left to right:

1. The power-on indicator at **I**. This glows when the LPC is powered on.
2. Seven macro control buttons. Use these to control the LPC and the show.
3. Read From Disk button. Use this to read the show into the LPC.
4. Disk drive.
5. Fuse holder at **F**. Protects the LPC from an excessive power drain by the RFU, if attached.
6. RFU connector at **R**.

LPC operation

You can run a show in an Express LPC as soon as you're done mounting (if needed) and cabling your LPC as explained earlier in this manual. The only thing more you need is a show that has been recorded on diskette accompanied by instructions about which macros available to the LPC were programmed into the show. The LPC clock may also be used in addition to macros to control the show, but clock control is not required.

Here are the basic steps for running an LPC show.

1. Power up the LPC and the dimmers.
2. Insert the show disk.
3. Push the **Read From Disk** button.
4. Push a macro button.

Macro control

Two banks of macros control the LPC: those operated from the front panel and those operated by means of a cable attached to the rear panel. Seven pushbutton switches labeled M1 through M7 on the front panel can be programmed for macros 1 through 7, respectively. See the Express User Manual, *Chapter 20 Control Interfaces*, for information about programming macros for a show.

Four switches can be wired to the Remote Macro connector on the LPC's rear panel and can be programmed for macros 1901 through 1904. Wiring information for remote macros is the same as for the Express console and is given under *Appendix A Installation*, page 261, of the Express User Manual.

Clock control

The LPC clock can control events in real time, which means that they execute automatically when a time and day of the week arrives. The show's programmer may create a show that contains one or more Real Time Programs. For example, you may have a show that runs under clock control every Monday, Wednesday and Friday at 6 p.m.

Real Time Programs operate with reference to local time, such as 7 a.m., Central Daylight Time, or with reference to astronomical time that is related to sunrise and sunset times. For instance, your show may contain a Real Time Program that runs the show two hours before every sunset. When your show relies on astronomical time, you must set the clock with latitude, longitude and time zone information for your location.

Before running a show containing Real Time Programs, you must set the clock. This operation is covered in this User Manual under *Setting the clock*, page 10. If you want to learn more about real time programs for the Express console and the LPC, see *Real Time Programs* in the Expression User Manual Supplement, page 33.

Additional controls and features

You can do more with your LPC than just run pre-programmed shows on command or in a timed manner with the internal clock. Following is a list of these additional capabilities and how you can implement them.

Setup

If your light show or system configuration requires special setup procedures, use an Automacro to get to the Setup menu. See *Automacros*, page 9. You must have a video monitor attached to your LPC when using the setup screens. See *Appendix A Installation*, page 245, of the Express User Manual for information about connecting a video monitor.

Printer

See the Express User Manual, *Appendix A Installation*, page 250, to install a printer with your LPC system. Connect the printer to the labeled port on the LPC rear panel. Information about printouts available for Express and LPC systems is found in the Expression User Manual Supplement, page 46.

ETCNet

See *Appendix A Installation*, page 253, of the Express User Manual for information about installing ETCNet and devices that can be used on it.

Connect the network cable to the labeled port on the LPC rear panel.

MIDI Show Control/ETC MIDI

See *Chapter 20 Interfaces* of the Express User Manual for information about using MSC and ETC MIDI.

Connect the external MIDI source, such as a MIDI Sequencer, to the LPC's MIDI "In" port. If any other device should receive the MIDI signal, connect the LPC's MIDI "Thru" port to the "In" port of the second receiving device. If MIDI information will be generated within the LPC, such as to control the external MIDI source device, run a cable from the LPC's "Out" port to the "In" port of the external MIDI source.

Remote Trigger

Your LPC can control an external device during a show with its Remote Trigger. The external device must be capable of responding to a switch closure.

The terminals of the LPC Remote Trigger switch are available at the LPC's Remote Macro port. See *Appendix A Installation*, page 261, of the Express User Manual for an explanation about how to wire this switch to the external device. The explanation applies equally to the Express console and the LPC. Information about programming the Remote Trigger is found in the Express User Manual under *Chapter 20 Remote Interfaces*, page 227.

Automacros

Ordinarily, the front panel macro buttons activate some predefined action in a show you loaded from diskette. For instance, macro 1 might be used to start the show and macro 2 used to stop it.

The LPC software also responds to these macro buttons whether a show is loaded or not. We call those intrinsic macro operations, Automacros, to distinguish them from programmed macros that are unique to each show.

The LPC has three Automacros. Each can place a particular display related to the system software on an attached video monitor. These three displays are the same that one sees when working directly with an Express console. Use these Automacros in conjunction with a Remote Focus Unit, if necessary, to patch lights, do setup procedures and do show editing.

Below is a list of the LPC Automacros and the display each activates. For additional information about these displays, see *Chapter 2 Displays* in the Express User Manual.

To activate an Automacro, press and hold macro button M7. While holding M7, press and hold one of the three buttons below. Then release M7 and the desired display will appear on the monitor. Release the other button.[2]

M1	Stage Display
M3	Patch Display
M4	Setup Display

[2.] *Note that M7 is pressed first and released first. This order is critical.*

Setting the clock

The LPC clock must be set only for shows containing Real Time Programs. If you learn that the show contains one or more of these programs, use one of the two procedures below to verify that the clock setup is right (only the procedure under *Using an RFU* can be used for astronomic settings). Clock settings must agree at least with the date and your local time, and if your show uses astronomic time references (sunrise and sunset), the clock also must be set for latitude, longitude and time zone.

NOTE: Clock setup information is stored with the LPC, not on the show diskette, and is retained in the console even when power is temporarily removed. Once set, you should not need to reset the clock, but you may need to revise the setup later if you need to add astronomic information.

Using an RFU

Those who have an ETC Remote Focus Unit should proceed as follows:

1. If your LPC system does not include a video monitor, connect one to it for this procedure. See *Appendix A Installation*, page 245, of the Express User Manual for monitor installation.
2. On the LPC, press M7. While holding M7, press and hold M4. Then release M7 to display the Setup menu, shown in Figure 4 below, on the monitor. Release M4.

Figure 4 ~ Setup menu display

Follow the step-by-step clock setup instructions under *Set Clock* on page 33 of the Expression User Manual Supplement. If you are setting the clock only to local time, complete only steps 1-5 of the procedure.

If you are setting the clock to astronomic time, complete the entire procedure in the User Manual Supplement through step 15. If you have latitude, longitude and time zone information for your location, use those figures. Alternatively, use the figures in *Appendix A* of this User Manual for the city nearest you,

Using macro buttons

If you are setting the clock to local time, not astronomical time, follow the procedure below. You will need the Clock Setup diskette, which is included in your LPC shipping package.

1. If your LPC system does not include a video monitor, connect one to it for this procedure. See *Appendix A Installation*, page 245, of the Express User Manual for installation information.

2. Insert the Clock Setup diskette into the LPC disk drive and press [Read From Disk] on the front panel of the LPC.

3. When the diskette stops moving, press [M1]. You should see the Set Time/Date display, Figure 5, on the monitor, with the time highlighted as shown.


```
        Enter current standard time (12 hour clock)
     (To start clock, press RECORD - To cancel, press CLEAR)

                       Time:  02:39 PM
                       Date:  25 June 98
                        Day:  Thursday
```

Figure 5 ~ Set Time/Date display

4. Press macro buttons M2 and M3 to increment or decrement the time until you get to the current time

5. Press macro button M4. After you press M4, AM or PM will be highlighted.

6. Switch between AM or PM by pressing macro button M2.

7. Press macro button M4. After you press M4, the date will be highlighted.

8. Continue, setting the date and day of the week in the same manner that you set the time in step 4, above, finishing each setting by pressing M4.[3]

9. When you are satisfied with all clock settings, press macro button M5.

10. Remove the Clock Setup diskette from the disk drive and store in a safe place.

[3.] *You can change individual settings without disturbing the others by pressing macro button M4 to cycle through the settings.*
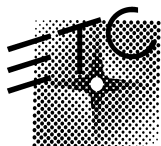
Appendix A
Time and location

United States

City, State	Time Zone	Latitude	Longitude
Albuquerque, NM	+ 7 West	35° 03´ N	106° 37´ W
Anchorage, AK	+ 10 West	61° 10´ N	149° 11´ W
Atlanta, GA	+ 5 West	33° 39´ N	84° 26´ W
Baltimore, MD	+ 5 West	39° 11´ N	76° 40´ W
Bangor, ME	+ 5 West	44° 48´ N	68° 50´ W
Billings, MT	+ 7 West	45° 47´ N	108° 32´ W
Boise, ID	+ 7 West	43° 36´ N	116° 13´ W
Boston, MA	+ 5 West	42° 20´ N	71° 01´ W
Buffalo, NY	+ 5 West	42° 53´ N	78° 51´ W
Burlington, VT	+ 5 West	44° 29´ N	73° 13´ W
Charleston, SC	+ 5 West	32° 47´ N	79° 59´ W
Charlotte, NC	+ 5 West	35° 11´ N	80° 50´ W
Cheyenne WY	+ 6 West	41° 08´ N	104° 47´ W
Chicago, IL	+ 6 West	41° 50´ N	87° 41´ W
Cincinnati, OH	+ 5 West	39°.08´ N	84° 31´ W
Cleveland, OH	+ 5 West	41°.28´ N	81° 40´ W
Dallas, TX	+ 6 West	32°.47´ N	96° 45´ W
Denver, CO	+ 7 West	39° 46´ N	104° 52´ W
Des Moines, IA	+ 6 West	41° 34´ N	93° 37´ W
Detroit, MI	+ 5 West	42° 22´ N	83° 06´ W
Fargo, ND	+ 6 West	46° 52´ N	96° 49´ W
Fort Worth, TX	+ 6 West	29° 46´ N	95° 23´ W
Hartford, CT	+ 5 West	41° 45´ N	72° 41´ W
Honolulu, HI	+ 10 West	21° 79´ N	157° 48´ W
Kansas City, MO	+ 6 West	39° 07´ N	94° 33´ W
Las Vegas, NV	+ 7 West	36° 12´ N	115° 13´ W
Lincoln, NB	+ 6 West	40° 48´ N	96° 41´ W
Little Rock, AR	+ 6 West	34° 43´ N	92° 21´ W
Los Angeles, CA	+ 8 West	34° 05´ N	118° 24´ W
Madison, WI	+ 6 West	43° 04´ N	89° 23´ W
Memphis, TN	+ 6 West	35° 06´ N	90° 00´ W
Miami, FL	+ 5 West	25° 49´ N	80° 13´ W
Milwaukee, WI	+ 6 West	43° 03´ N	87° 58´ W
Minneapolis, MN	+ 6 West	44° 57´ N	93° 16´ W
Montgomery, AL	+ 6 West	32° 21´ N	86° 17´ W
New Orleans, LA	+ 6 West	30° 03´ N	89° 55´ W
New York, NY	+ 5 West	40° 46´ N	73° 58´ W
Oklahoma City, OK	+ 6 West	35° 28´ N	97° 30´ W
Philadelphia, PA	+ 5 West	40°.00´ N	75° 08´ W
Phoenix, AZ	+ 7 West	33° 32´ N	112° 04´ W
Pittsburg, PA	+ 5 West	40° 26´ N	79° 58´ W
Portland, OR	+ 8 West	45° 32´ N	122° 39´ W
Providence, RI	+ 5 West	41° 49´ N	71° 25´ W
Richmond, VA	+ 5 West	37° 31´ N	77° 28´ W
Salt Lake City, UT	+ 7 West	40° 46´ N	111° 55´ W
San Antonio, TX	+ 6 West	29° 27´ N	98° 30´ W
San Diego, CA	+ 8 West	32° 48´ N	117° 08´ W
San Francisco, CA	+ 8 West	37° 47´ N	122° 33´ W

```
Savannah, GA . . . . . . . . . . . .  + 5 West. . . . . . . . . . .32° 01´ N . . . . . . . . . .81° 07´ W
Seattle, WA  . . . . . . . . . . . . .  + 8 West. . . . . . . . . . .47° 37´ N . . . . . . . . .122° 21´ W
Sioux Falls, SD . . . . . . . . . .  + 6 West. . . . . . . . . . .43° 32´ N . . . . . . . . .96° 43´ W
Syracuse, NY  . . . . . . . . . . .  + 5 West. . . . . . . . . . .43° 02´ N . . . . . . . . .76° 08´ W
Tampa, FL. . . . . . . . . . . . . .  + 5 West. . . . . . . . . . .27° 57´ N . . . . . . . . .82° 28´ W
Tucson, AZ . . . . . . . . . . . . .  + 7 West. . . . . . . . . . .32° 11´ N . . . . . .110° 53´ W
Washington D.C.  . . . . . . . . .  + 5 West. . . . . . . . . . .38° 54´ N . . . . . . . . .77° 00´ W
```

Outside the United States

City, Country	Time Zone	Latitude	Longitude
Algiers, Algeria	- 1 East.	36° 46´ N	. . . . 30° 30´ E
Amsterdam, Netherlands	- 1 East.	52° 23´ N	. . . . 4° 55´ E
Ankara, Turkey	- 2 East.	39° 57´ N	. . . . 32° 53´ E
Athens, Greece.	- 2 East.	37° 58´ N	. . . . .23° 43´ W
Barcelona, Spain.	- 1 East.	41° 24´ N	. . . . .2° 09´ W
Bergen, Norway	- 1 East.	60° 24´ N	. . . . 5° 19´ E
Berlin, Germany	- 1 East.	52° 27´ N	. . . . 13° 18´ E
Bordeaux, France	- 1 East.	44° 50´ N	. . . . .0° 34´ W
Bristol, England.	0	51° 30´ N	. . . . .3° 30´ W
Brussels, Belgium.	- 1 East.	50° 48´ N	. . . . 4° 21´ E
Cairo, Egypt	- 2 East.	29° 52´ N	. . . . 31° 20´ E
Casablanca	0	33° 35´ N	. . . . .7° 39´ W
Copenhagen, Denmark.	- 1 East.	55° 41´ N	. . . . 12° 33´ E
Dublin, Ireland.	0	53° 22´ N	. . . . .6° 21´ W
Edinburgh, Scotland	0	55° 55´ N	. . . . .3° 11´ W
Fukuoka, Japan.	- 9 East.	33° 35´ N	. . . . 130° 27´ E
Glasgow, Scotland	0	55° 52´ N	. . . . .4° 17´ W
Hamburg, Germany	- 1 East.	53° 33´ N	. . . . 9° 58´ E
Helsinki, Finland	- 2 East.	60° 10´ N	. . . . 24° 57´ E
Hong Kong	- 8 East.	22° 18´ N	. . . . 114° 10´ E
Lisbon, Portugal	0	38° 43´ N	. . . . .9° 8´ W
London, England.	0	51° 29´ N	. . . . .0° 0´ W
Lyon, France.	- 1 East.	45° 42´ N	. . . . 4° 47´ E
Madrid, Spain	- 1 East.	40° 25´ N	. . . . .3° 41´ W
Marseilles, France	- 1 East.	43°18´ N	. . . . 5° 23´ E
Milan, Italy	- 1 East.	45° 27 N	. . . . 9° 17´ E
Montreal, Quebec, Canada. . .	+ 5 West.	45°.30´ N	. . . . .73° 36´ W
Moscow, Russia.	- 3 East.	55° 46´ N	. . . . 37° 20´ E
Munich, Germany.	- 1 East.	48° 09´ N	. . . . 11° 34´ E
Naples, Italy	- 1 East.	40° 53´ N	. . . . 14° 18´ E
Oslo, Norway	- 1 East.	59° 56´ N	. . . . 10° 44´ E
Paris, France.	- 1 East.	48° 49´ N	. . . . 2° 29´ E
Prague, Czechoslovakia	- 1 East.	50° 05´ N	. . . . 14° 25´ E
Reykjavik, Iceland	0	64° 08´ N	. . . . 21° 56´ E
Riga, Latvia	- 3 East.	56° 40´N	. . . . 106° 10´ E
Rome, Italy	- 1 East.	41° 48´ N	. . . . 12° 36´ E
Sapporo, Japan.	- 9 East.	43° 04´ N	. . . . 141° 21´ E
Seoul, Korea	- 9 East.	37° 34´ N	. . . . 126° 58´ E
Stockholm, Sweden	- 1 East.	59° 21´ N	. . . . 18° 04´ E
Strasbourg, France	- 1 East.	48° 35´ N	. . . . 7° 46´ E
Tokyo, Japan.	- 9 East.	35° 41´ N	. . . . 139° 46´ E
Toronto, Ontario, Canada	+ 5 West.	43° 39´ N	. . . . .79° 23´ W
Vancouver, B.C., Canada	+ 8 West.	49° 15´ N	. . . . .123° 07´ W
Vienna, Austria	- 1 East.	48° 15´ N	. . . . 16° 22´ E
Warsaw, Poland	- 1 East.	52° 13´ N	. . . . 21° 02´ E

Electronic Theatre Controls